

## ELECTRIC POLE FOR LOW-VOLTAGE POWER CIRCUIT BREAKER

DESCRIPTION

The present invention relates to an electric pole for a low-voltage power circuit breaker having improved characteristics.

- 5 More specifically, the expression "low-voltage power circuit breaker" is used to designate a circuit breaker which is generally used in applications, e.g. industrial systems, characterized by operating voltages of less than 1000 volts and by electric currents, typically alternate currents, of relatively high nominal value, (from a few hundred to several thousand amperes), which accordingly produce
- 10 relatively high power levels.

It is known that power circuit breakers, comprising one or more electric poles, are normally designated to ensure the electric current required by the various users, at the same time performing connection and disconnection of the load or protecting the load from abnormal events, due for example to overloads or to a

15 short circuit, by automatically opening the circuit, or disconnecting the protected circuit by opening appropriately provided electric contacts in order to achieve complete isolation of the load with respect to the power supply grid.

Currently there are many embodiments of low-voltage power circuit breakers, according to the nominal current considered.

- 20 In general, however, for each electric pole the interruption of the current, be it a nominal, overload or short-circuit current, occurs by virtue of the separation of a movable contact and of a fixed contact. \*

The typical structure of an electric pole for a low-voltage power circuit breaker is described with reference to Figure 1. Said pole comprises a fixed contact 1

25 and a movable contact 2 which can be mutually coupled/uncoupled. The movable contact 2 is connected and arranged on a contact supporting shaft 4 which is generally made of insulating material and acts as a mechanical support and/or transmits the motion to the movable contact. In order to maintain

\* An example of a contact arrangement for a low voltage circuit breaker is described in the European patent EP 0219449

-- a fixed contact and a movable contact which can be mutually coupled/uncoupled;

-- at least two conducting elements, suitable to electrically connect said movable contact to a power supply grid, said conducting elements being arranged so that

5 the electric currents flowing through them are equally orientated; and

-- means for mechanically supporting and actuating said movable contact;

The electric pole according to the invention is characterized in that it comprise at least one insulating element which is interposed between said conducting elements and ~~is suitable to~~ contrast, by friction with said conducting elements,

10 electrodynamic repulsion forces that are generated between said fixed contact and said movable contact during opening in short-circuit operating conditions.

Further characteristics and advantages of the invention will become apparent from the description of some preferred but non-limitative embodiments of an electric pole for a low-voltage power circuit breaker according to the invention, 15 illustrated only by way of non-limitative example with the aid of the accompanying drawings, wherein:

Figure 1 is a schematic view of an electric pole for low-voltage power circuit breakers, having a known structure;

Figure 2 is a perspective view of a constructive detail of the electric pole of

20 Figure 1;

Figure 3 is a schematic view of the structure of a first embodiment of the electric pole according to the invention;

Figures 4a and 4b are two different perspective views of a constructive detail of the embodiment of the electric pole according to the invention, shown in Figure

25 3.

With reference to Figure 3, the electric pole according to the invention has a fixed contact, not shown in Figure, and a movable contact 10 which can be mutually coupled/uncoupled, and two or more conducting elements 11 for